REMARKS

Applicant respectfully requests re-consideration of the application in view of the amendments and the arguments presented below.

Summary of Office Action

Claims 1-25 are pending.

The drawings were objected to.

Claims 1-2, 4-10 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,994,213 B2 of Lee ("Lee").

Claims 1-2, 4-10, 11-25 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,295,343 B1 of Hjartarson, et al. ("Hjartarson").

Claim 3 was rejected under 35 U.S.C. § 103 as being unpatentable over Hjartarson in view of U.S. Patent No. 5,452,345 of Zhou ("Zhou")

Claims 23-25 were rejected under 35 U.S.C. § 103 as being unpatentable over Hjartarson in view of Zhou.

Response to Drawing Objections

The Examiner objected to drawings 1-3, 4A, and 4B as illustrating only prior art. Accompanying this Amendment are replacement drawing sheets for Figures 1-3, 4A and 4B. Applicant has designated Figures 1-3 and 4A with the legend "Prior Art". Applicant respectfully disagrees with the Examiner as to Figure 4B because Figure 4B illustrates a high level integration of POTS and DSL linecards as claimed by applicant, thus Figure 4B has not been designated with a "Prior Art" legend.

Applicant respectfully submits that the objections to the drawings have been overcome.

Response to 35 U.S.C. § 102 rejections

Claims 1-2, 4-10, and 11-25 were rejected as being anticipated by at least one of Lee and Hjartarson.

With respect to Lee, the Examiner has stated:

> Lee teaches a subscriber line interface circuit apparatus (transceiver) shown in Fig. 2, comprising:
>
> an integrated circuit coupling at least one of an upstream and a downstream voice path for carrying voice signals to a subscriber line (290),
>
> wherein the integrated circuit couples at least one of an upstream and a downstream data path for carrying data signals to the subscriber line [Figs. 1-4; col. 5, line 46 to col. 6, line 3; col. 8, lines 44-58; col. 10, lines 41-53; col. 10, line 40-58]; wherein the voice signals are communicated within a first frequency range (i.e., voiceband), wherein the data signals are communicated within a second frequency range (i.e., non-voiceband), wherein the first and second frequency ranges are distinct [Fig. 2].

(09/27/2005 Office Action, p. 3)

Applicant traverses the Examiner's characterization of Lee. Lee's element 380 is a driver for communicating *upstream data signals* to the subscriber line. Lee's receiver circuitry is coupled to extract *a downstream data signal.* The citations provided by the Examiner do not appear to support the Examiner's position.

Applicant submits that *Lee does not teach or suggest an integrated circuit driver that combines a downstream voice signal and downstream data signal into a common downstream signal for the subscriber line.*

To the contrary, referring to Figure 2, Lee clearly has distinct couplings from the integrated circuit 218 to the subscriber line 290 for each of the voice communications and the data communications. Furthermore, there is no common driver for the voice and the data signals.

Codec 212 is associated with the upstream or downstream *voice* signals. Transmit block 230 is separately responsible for upstream *data* signals. (Lee, col. 4, lines 20-35). There is no integrated circuit driver that combines a downstream voice signal and a downstream data signal into a common downstream signal for the subscriber line 290. Even if one assumes *arguendo* that directionality (i.e., upstream or downstream) is irrelevant, applicant notes that *Lee's integrated circuit 218 does not include a driver that combines voice and data signals into a common signal for the subscriber line 290.*

Lee's receiver 240 is coupled to extract the downstream data signal from a downstream signal carried by the subscriber line. Lee does not teach or suggest a receiver that is coupled to provide both an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line. As before, even if one assumes *arguendo* that directionality (i.e., upstream or downstream) is irrelevant, Lee's integrated circuit 218 does not include a receiver that extracts both the voice signals and data signals from a common signal carried by the subscriber line.

Applicant thus submits that Lee does not teach or suggest either (1) a driver combining a downstream voice signal and a downstream data signal into a common downstream signal for a subscriber line, or (2) receiver circuitry coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line, wherein the driver and receiver circuitry reside on the same integrated circuit die.

In contrast, claim 1 includes the language:

> 1. A subscriber line interface circuit apparatus, comprising:
> *a driver combining a downstream voice signal* in a voiceband range *and a downstream data signal* in a non-voiceband range *into a common downstream signal for a subscriber line*; and
> *receiver circuitry coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line, wherein the driver and receiver circuitry reside on a same integrated circuit die.*

(Claim 1)(*emphasis added*)

Thus claim 1 is not anticipated by Lee.

With respect to Hjartarson, the Examiner has stated in part:

> Hjartarson, et al teach an integrated subscriber line interface circuit apparatus (transceiver) shown in Fig. 4, comprising:
> ...
> a driver combining a downstream voice signal in a first frequency range (i.e., voiceband range) and a downstream data signal in a second frequency range (i.e., a non-voiceband range) into a common downstream signal for a subscriber line (404) [Figs. 5-6]; col. 5, line 45 to col. 6, line 16]; and

receiver circuitry comprised of a feed resistor (418) coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line [Figs. 6-9; col. 6, lines 17-24];
wherein the driver and receiver circuitry reside on a same integrated circuit (i.e., integrated line card 400)[Fig. 4; col. 5, lines 31-44; col. 7, lines 36-55]

(09/27/2005 Office Action, p. 5)

Applicant traverses the Examiner's characterization of Hjartarson. First, there is no teaching or suggestion that Hjartarson's driver and receiver circuitry reside on the same integrated circuit die. The term "integrated line card" cited by the Examiner refers to the integration of the POTS and xDSL functionality onto a single line card instead of the prior art practice of maintaining separate POTS and xDSL line cards. (Hjartarson, col. 5, lines 31-44). *This is not equivalent to residing on the same integrated circuit die.* Applicant further submits that a line card is not an integrated circuit.

Second, the purpose of Hjartarson's feed resistor 418 is to sense the current in the line for the purpose of synthesizing an impedance. (Hjartarson, col. 5, lines 31-44; col. 6, lines 17-24). The feed resistor is not capable of separating the upstream data signal and the upstream voice signal from the upstream signal carried by the subscriber line. *Buffers 407 provide the same subscriber line signal to both the POTS circuitry 406 and the xDSL modem 408.* (Hjartarson, Fig. 6)

Applicant submits Hjartarson does not teach or suggest separating the voice and data signals external to either the xDSL modem 408 or the POTS circuitry 406. In Figure 7, for example, POTS circuitry 406 and xDSL modem 408 receive the same signal from ADC 512 for their receive inputs. The embodiment in Figure 8 provides separate ADCs for the POTS circuitry and the xDSL modem receive inputs. Each ADC is coupled by a low pass anti-aliasing filter 514 through a buffer to the subscriber line. Since the voice signals have a lower frequency range than the data signals, the xDSL modem will inherently receive the voice signals along with the data signals. Also, since the corner frequency of the anti-aliasing filter for the POTS circuitry is not disclosed, it is ambiguous as to whether the POTS circuitry receives only voice signals or a combination of voice

and data signals. In any event, there is no receiver separately providing voice and data signals.

Applicant submits that Hjartarson *does not teach or suggest (1) a SLIC having driver and receiver circuitry residing on the same integrated circuit die, OR (2) wherein the receiver circuitry provides an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line.*

In contrast, claim 1 includes the language:

> 1. A subscriber line interface circuit apparatus, comprising:
> a driver combining a downstream voice signal in a voiceband range and a downstream data signal in a non-voiceband range into a common downstream signal for a subscriber line; and
> *receiver circuitry coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line, wherein the driver and receiver circuitry reside on a same integrated circuit die.*

(Claim 1)(*emphasis added*)

Thus applicant submits claim 1 is not anticipated by Lee or Hjartarson.

With respect to claim 11, the Examiner has stated:

> Hjartarson et al teach a subscriber line transceiver apparatus shown in Fig. 8, comprising:
> a first receiver circuit [Fig. 8; elements 514 and 610] for extracting upstream voice signals carried by a subscriber line, *wherein the first receiver circuit substantially eliminates any signals outside of a first frequency range associated with voiceband communications to provide the upstream voice signals;* and
> a second receiver circuit [Fig. 8; elements 514 and 612] for extracting upstream data signals from the subscriber line, *wherein the second receiver circuit substantially eliminates any signals outside of a second frequency range associated with data communications to provide the upstream data signals, wherein the first and second receiver circuits reside on a same integrated circuit die (i.e., integrated line card 600)*[Fig. 8; col. 7, lines 10-29]

(09/27/2005 Office Action, pgs 5-6)(*emphasis added*)

As stated above, an integrated line card is not an integrated circuit. *There is no teaching or suggestion that Hjartarson's elements 514, 610 and 514,612 reside on the same integrated circuit die.*

With respect to elimination of signals, the filters identified by the Examiner are *anti-aliasing filters*. Anti-aliasing filters are *low pass filters* as indicated by element 514. A/D converter 610 clearly receives a filtered upstream voice signal and the associated anti-aliasing filter 514 eliminates some of the signals above the voiceband range prior to A/D converter 610.

A/D converter 612 receives a filtered upstream data signal. Given, however, that associated anti-aliasing filter 514 is a *low pass* filter, signals below the corner frequency will not be eliminated. Thus the voiceband signal will still be present in Hjartarson's filtered upstream data signal at this point. Indeed, Hjartarson's use of first order anti-aliasing filters and high order POTS and xDSL modem input filters indicates that the elimination of undesirable signal components is performed within the POTS or xDSL modems. (Hjartarson, col. 7, lines 25-28) *Hjartarson's second receiver circuit identified by the Examiner does not substantially eliminate any signals outside of the frequency range associated with data communications.*

Thus *Hjartarson does not teach (1) first and second receiver circuits extracting upstream voice and data signals respectively, wherein the first receiver substantially eliminates any signals outside of a first frequency range associated with voiceband communications and the second receiver substantially eliminates any signals outside of a second frequency range associated with data communications OR (2) that the first and second receivers reside on the same integrated circuit die.*

In contrast, claim 11 includes the language:

> 11. A subscriber line transceiver apparatus, comprising:
> *a first receiver circuit for extracting upstream voice signals carried by a subscriber line, wherein the first receiver circuit substantially eliminates any signals outside of a first frequency range associated with voiceband communications to provide the upstream voice signals;* and
> *a second receiver circuit for extracting upstream data signals from the subscriber line, wherein the second receiver circuit substantially eliminates any signals outside of a second frequency range associated with data communications to provide the upstream data signals, wherein the first and second receiver circuits reside on a same integrated circuit die.*

(Claim 11)(*emphasis added*)

Thus claim 11 is not anticipated by Hjartarson.

In view of the arguments presented above, applicant submits claims 1 and 11 are not anticipated by the cited references. Given that claims 2-12 depend from claim 1, and claims 12-25 depend from claim 11, applicant submits claims 2-10 and 12-25 are likewise not anticipated by the cited references.

Applicant submits that the 35 U.S.C. § 102 rejections have been overcome.

Response to 35 U.S.C. § 103 rejections

Claims 3 and 23-25 were rejected as being unpatentable over Hjartarson in view of Zhou.

Applicant submits that claims 3 and 23-25 are dependent claims and that Zhou does not make up for the deficiencies of the prior art presented above with respect to the 35 U.S.C. § 102 rejections.

Claims 1, 11, and 17 are patentable under 35 U.S.C. § 103 in view of the cited references. Given that claims 2-10, 12-16, and 18-24 depend from one of claims 1, 11, or 17, applicant submits claims 2-10, 12-16, and 18-24 are likewise patentable over the cited references under 35 U.S.C. § 103.

Applicant submits the rejections under 35 U.S.C. § 103 have been overcome.

Conclusion

In view of the arguments presented above, applicant respectfully submits the applicable rejections and objections have been overcome. Accordingly, claims 1-25 should be found to be in condition for allowance.

If there are any issues that can be resolved by telephone conference, the Examiner is respectfully requested to contact the undersigned at **(512) 858-9910**.

Respectfully submitted,

Date January 27, 2006 William D. Davis

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